

# ELECTRONIC

STEP  
BY  
STEP

# DESIGN

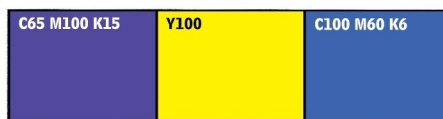
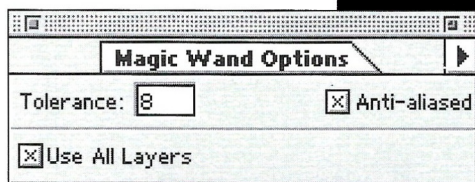


DECEMBER 1998 VOLUME 10 NUMBER 12 \$6 US \$8.25 CDN

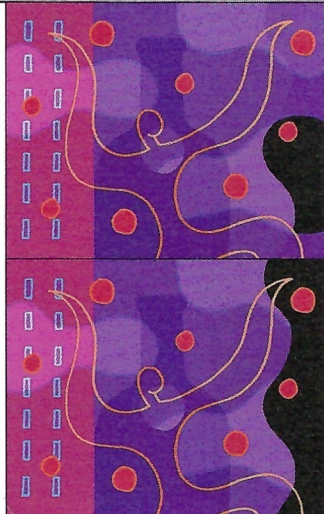
To combine the spontaneity of hand drawing with the flexibility of Photoshop layers, Jose Ortega (New York) has adjusted his sketching method to make the most of the computer's capabilities. Once he finalizes a sketch, he redraws it in pieces, sketching groups of elements separately so he can set them on their own layers once he scans all the sketches.

# Drawing in layers

▼ To add color, Ortega used the magic wand to select a shade of gray, then filled. As he worked, he kept the Magic Wand Options palette open so that he could check and uncheck the Use All Layers option.

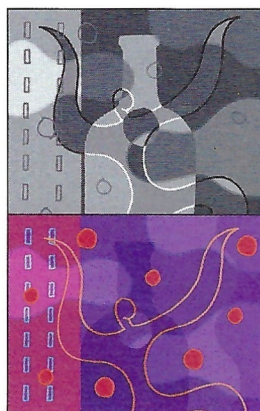


► The wavy shape at the far right is on its own layer, set to Overlay so that it picks up some of the colors of the background shapes. With Use All Layers checked, a magic wand click selects only a single color (shown in black), as though the image had been flattened.



▲ With Use All Layers unchecked, clicking with the magic wand selects the entire wave shape.

▼ Because he had drawn elements separately and set them on different layers, Ortega could easily reposition objects (such as the dancer).

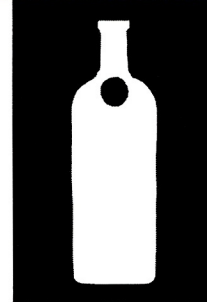
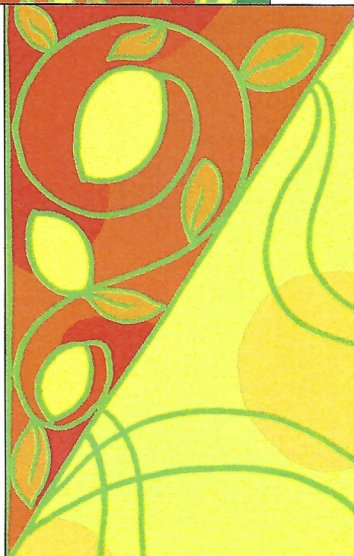


▲ The clients specified a color that set the tone for each ad, but otherwise left color decisions up to Ortega. Adding color while maintaining tonal balance was a challenge: "There was a lot of tweaking, because every color affected every other color," he says.

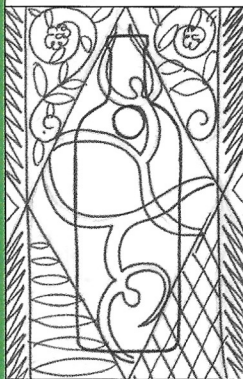




# PHOTOSHOP



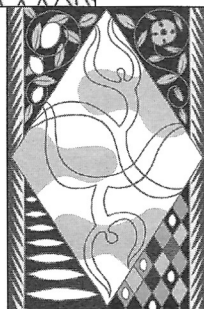
◀ Before settling on the soft palette he used in the blue ad, Ortega experimented with bolder colors. In the end, he decided to keep those bright colors only inside the bottle's outline, so he added a layer mask.



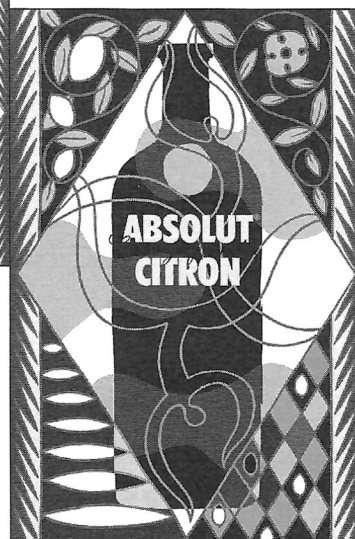
◀ Once his pencil sketch had been approved by the design firm in charge of the project, Ortega redrew it in pencil, tightening up the

composition and shading important elements to work out the tonality. He scanned those pencil drawings, set each one on its own Pho-

toshop layer, then used the scans as a template to produce a grayscale "electronic sketch," which was sent to Absolut for approval.



◀ To introduce more color into some parts of the image, Ortega used the lasso to define shapes (such as the curvy forms in the upper left corner) and filled them.



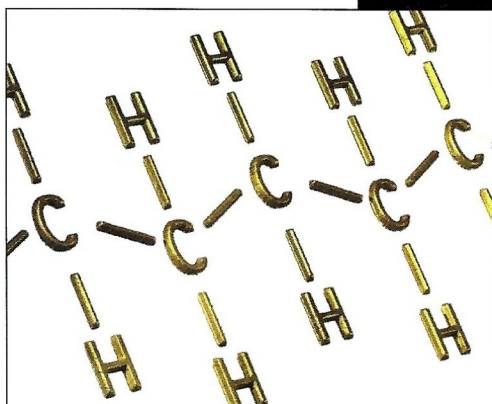
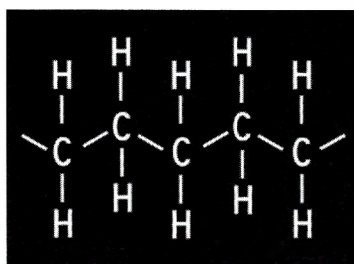
◀ As he worked on the grayscale Photoshop draft, Ortega kept the bottle and type on their own layers. To make the bottle interact with the background, he experimented with different blending modes, finally settling on Exclusion.



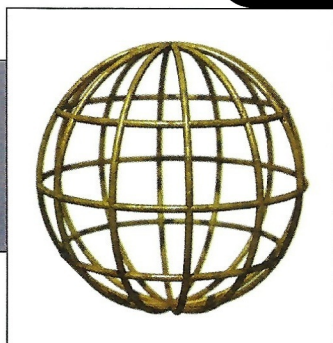
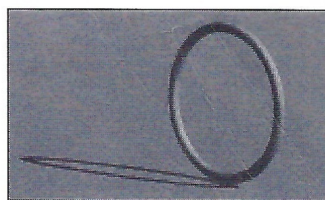
To create an evocative collage for Chevron, Richard Tuschman (Pepper Pike, Ohio) used Photoshop to assemble found objects, laser prints, photographs, and shapes he had created in Bryce 3D. To make all these elements interact with each other, Tuschman went far beyond drop shadows, using layer masks to brush transparency into objects and add texture to type.

▼ The bevel was added to the lettering in Bryce. First, Tuschman defined a “mountain” bevel with a mirror image at the bottom by clicking the symmetrical lattice icon (which resembles a spinning top). Then he imported his PICT formula file (by clicking the Picture tab in the Terrain Editor and loading the image) to shape the lattice.

▼ Tuschman created the formula in Illustrator and opened it in Photoshop, where he applied the Gaussian Blur filter (in the Filter, Blur menu) to add more shades of gray before saving as a PICT.

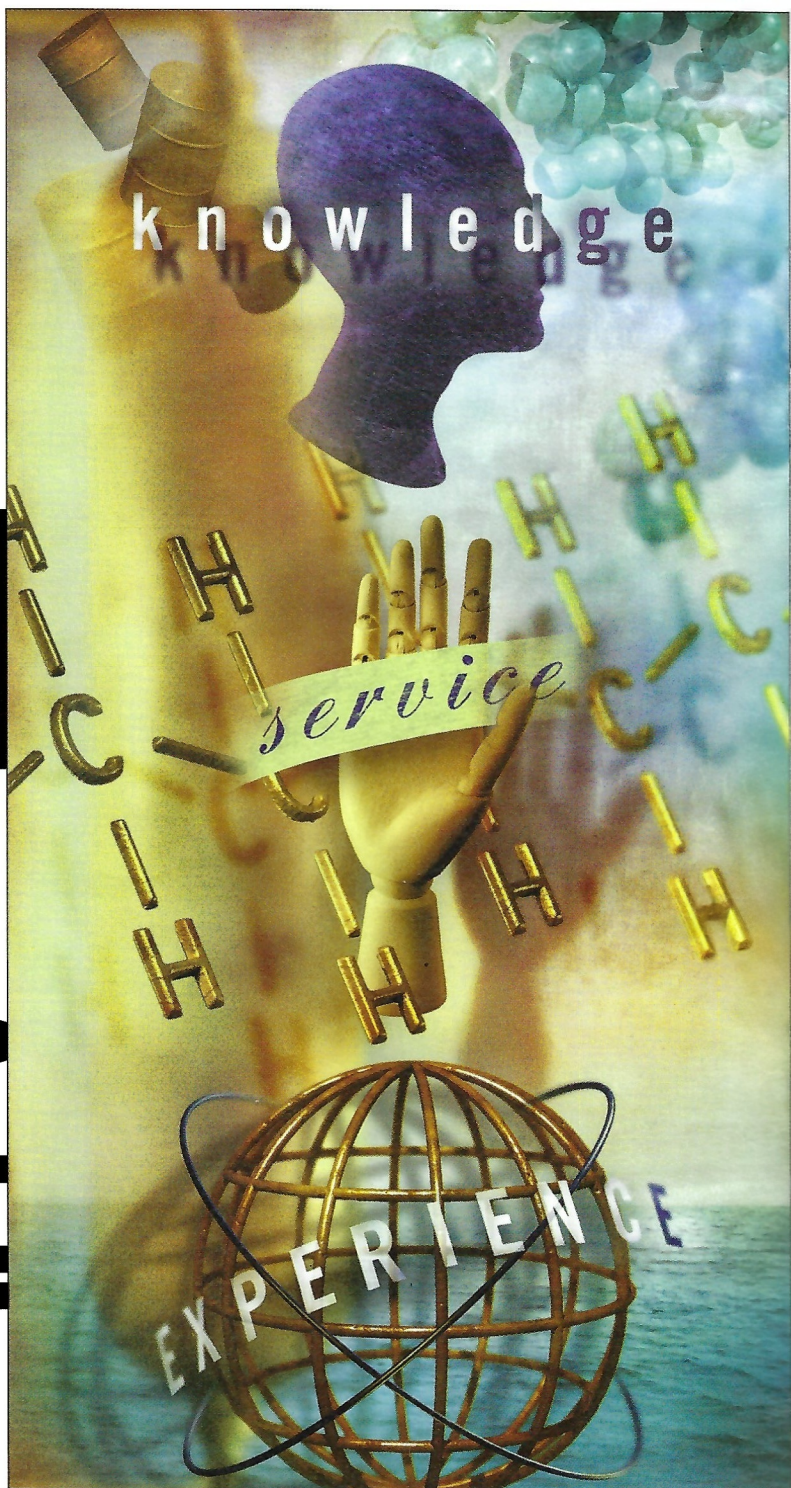


▼ Tuschman created a ring using one of Bryce’s primitives (Bryce calls it a torus), then clicked the E button to open the Torus Editor, where he adjusted the inner radius. He used many rings to build a globe.



# Adding depth

◀ A hand-painted gold texture was used as a texture map in Bryce to color the lettering in the formula and the globe.







**1** To give the "Service" lettering more texture, Tuschman set the type in Illustrator, printed it on textured paper, then scanned.



**2** After adding a Photoshop layer mask, Tuschman painted into the mask with the airbrush to soften the left edge of the paper and to open up a gap on the lower right (so that the thumb would seem to pass in front of the paper).



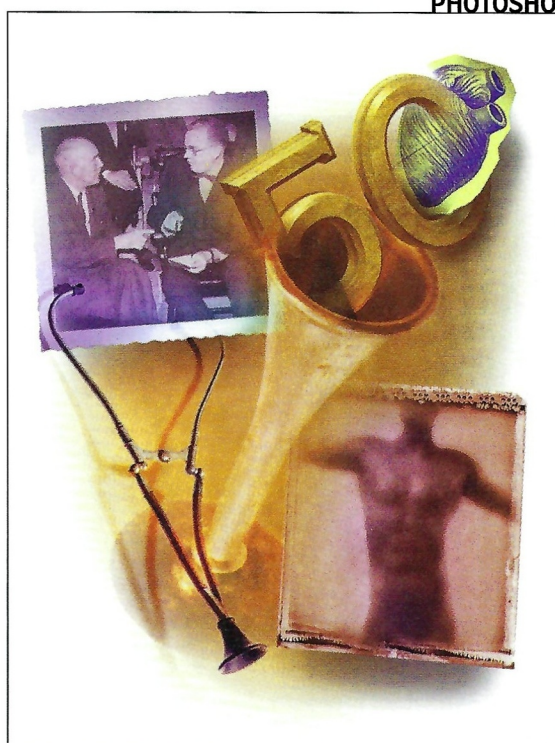
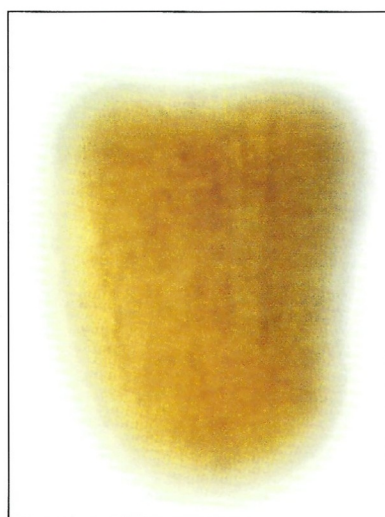
**3** An airbrushed shadow adds to the sense of dimension.



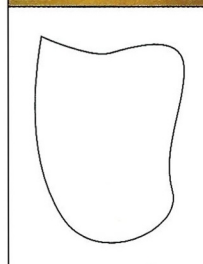
◀ Rather than place Illustrator type directly in his Photoshop image, Tuschman set it in a layer mask (by selecting the type, then choosing Add Layer Mask, Show Selection from the Layers menu). "That way I can use it like a stencil," he says.



▲ When Tuschman used the airbrush to paint onto the layer, the mottled, multicolored strokes showed through the layer mask, giving the type a more complex surface texture.



**1** ▲ In this image, created for the American College of Cardiology's 50th anniversary convention, Tuschman wanted a vignette effect in the background.



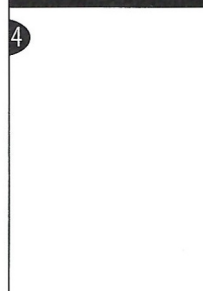
**1** He began with a scan of a hand-painted texture.

**2** In Photoshop, he drew a path in an organic shape.



**3** Loading the path as a selection, Tuschman turned it into a channel (by Option-clicking the New Channel icon in the Channels palette). Then he applied a Gaussian blur to the channel.

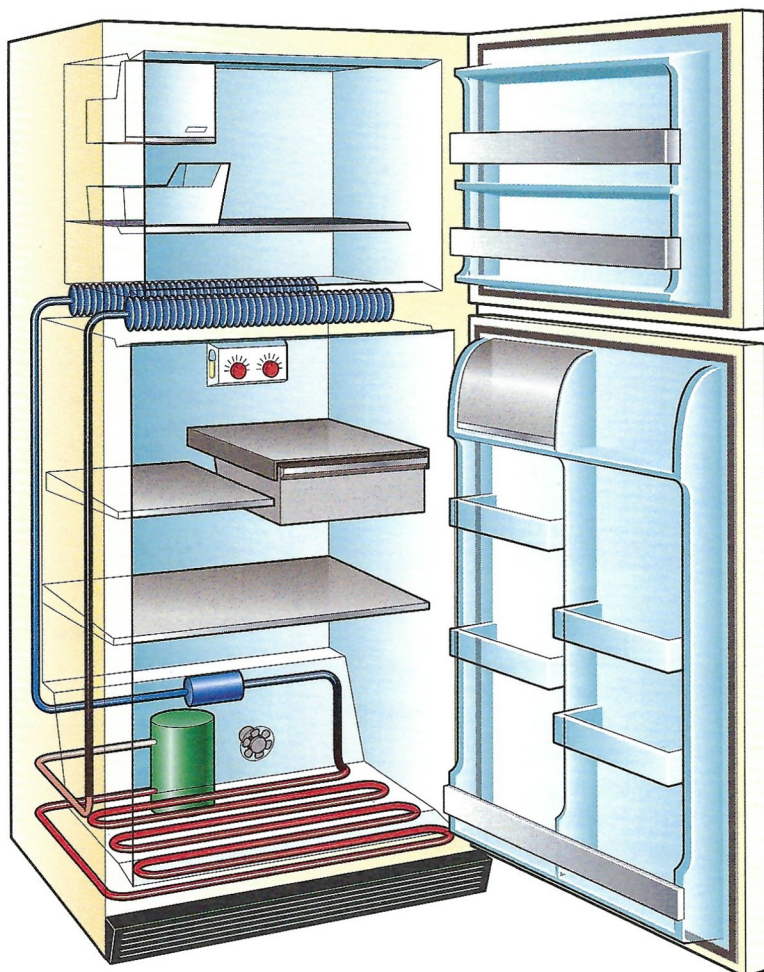
**4** He created a new layer above the background texture, loaded the channel as a selection, inverted the selection (Command-I), and filled the layer with white.



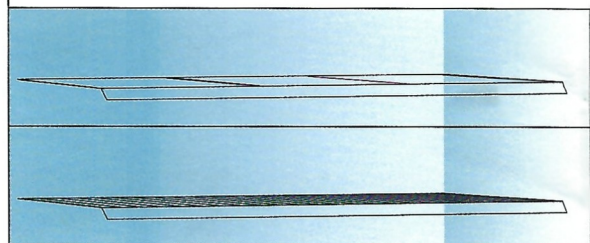


# Rendering Surfaces

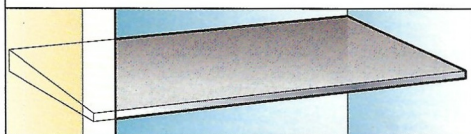
ILLUSTRATOR



When Greg Maxson (Urbana, Ill.) illustrated the workings of a refrigerator for a children's publication from Grolier Encyclopedia, he needed to show many surfaces, from translucent plastic to wire grids, and although photorealism wasn't his goal, he wanted the final image to be realistic enough to be understood easily. Illustrator gradients and highlights made this task easier.



▲ Although there are no horizontals, the extreme perspective gives these lines the plausible impression of a shelf grid.

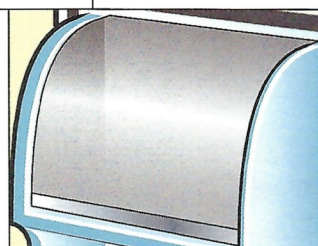


▲ To make a shelf look like translucent glass, Maxson drew it in two pieces, divided at the vertical line that represents the back corner of the refrigerator. He filled each section with a gradient; both gradients faded to the

C36 M36 Y32 K23 TO C11 M11 Y10 K5	C29 M29 Y26 K13 TO C11 M11 Y10 K5
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same shade of pale gray at the front of the shelf, but the starting color for one gradient is slightly darker.

► Maxson drew a compartment lid in two parts. To make the lid look curved, he filled each section with a three-part gradient with a light highlight in the center.



C41 M41 Y37 K26 ►

C7 M7 Y6 K3 ►

C16 M16 Y15 K10 ►

◀ C30 M30 Y26 K13

◀ C5 M5 Y4 K13

◀ C16 M16 Y15 K10



# Color adjustment on the fly

**1** To generate the coils at the bottom of the refrigerator, Maxson began by drawing a series of lines and circles.

**2** After cutting the circles in half, Maxson joined them to the lines to create a continuous curve.

**3** Maxson gave the shape a heavy red stroke. After adding the other shapes that make up the

coil, he used the KPT Vector F/X filter set to skew it into perspective, then converted the stroke to a filled shape with the Outline Path function (in the Object, Path menu). To add a black outline, he copied the red shape and gave it a black stroke.

**4** To add a highlight to the coils, Maxson first copied one of the curves (shown in blue).

**5** He assigned a heavy stroke to the copied curve, then used Outline Path to convert it to a filled shape.

**6** To bring the curve to a smooth point, he selected the end-points and averaged them (by choosing Object, Path, Average or Command-Option-J).

**7** He adjusted the curve by eye, then gave it a white fill.

As Photoshop's user guide notes, Adjustment Layers come in handy when you want to experiment because none of the modifications are permanent until you merge the layer or flatten the image. Using an Adjustment Layer is similar to setting a gel over a stage light; it changes the way the scenery looks, but it doesn't change the scenery.

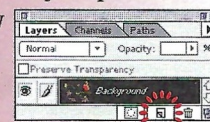
Experimentation is only one advantage of working with Adjustment Layers, though. The real power is flexibility, which can speed up the process of color correction. **Tip:** When you need to color correct a memory-intensive file, you can save time by working on an Adjustment Layer in a low-res copy of the image, then using the drag-and-drop function to take the Adjustment Layer into the high-res file.

To create an Adjustment Layer, Command-click the New Layer icon at the bottom of the Layers palette. This opens the New Adjustment Layer dialog box, where you can select the kind of adjustment you want to make. You can choose from most — but not all — of the options available in Photoshop's Image, Adjust menu: Levels, Curves, Brightness/Contrast, Color Balance, Hue/Saturation, Selective Color, Channel Mixer, Invert, Threshold, or Posterize.

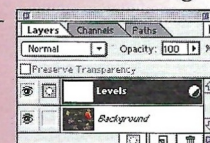
With an Adjustment Layer, you have access to all the functionality of an ordinary layer. So when you're after an exotic effect, you might consider combining one of the blending modes with the adjustment. But for color correction, nothing beats the opacity function for letting you work quickly. Here, for example, we began with an image that was much too dark. Instead of working diligently in the Levels or Curves dialog box, we made a speedy adjustment — over-lightening the image — and then used the opacity slider to hone the effect.



Original image is too dark



Command-click to add an Adjustment Layer



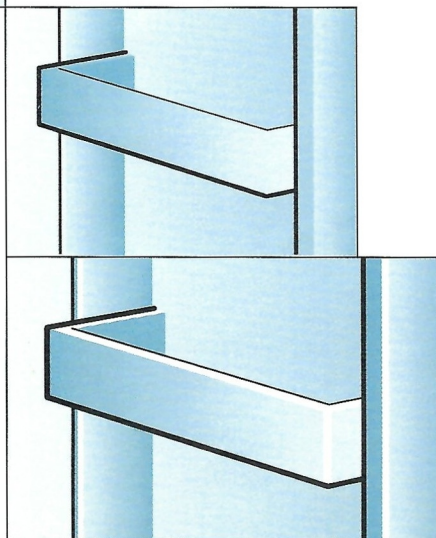
Adjusted image looks washed out

► Maxson first created a grid for the freezer shelf, but "because the angle is so extreme, it looked like a black blob," he says. So he drew a set of lines in perspective (shown in red) and blended between them.

► For a convincing plastic surface, Maxson wanted just the right balance between dullness and reflectivity. So he began by filling the inner parts of the refrigerator with a simple gradient.

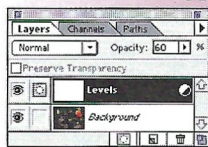
► White highlights added just a touch of shine.

C15 M3 Y3 to  
C50 M10 Y10





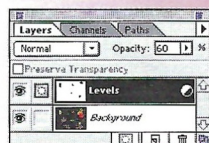
Adjustment Layers have one important advantage over the typical Photoshop layer: They're automatic masks, easy to customize — which means you can refine them to apply the color adjustments selectively, modifying some areas while leaving others alone.



Lowering the opacity of the Adjustment Layer improves the effect

To customize the mask, simply activate the layer and begin painting. We used that approach here to paint over parts of the photo

that got too washed out as a result of the Levels adjustment (specifically, the yellow flowers). **Tip:** When you create a new Adjustment Layer — and you don't have an active selection — Photoshop creates an empty (white) mask, which lets the adjustment affect all the underlying pixels. That empty mask is shown as a white thumbnail in the Layers palette.



Painting into the layer mask reclaims washed-out highlights

If you want to confine the adjustment to a specific area, make a selection before Command-clicking on the New Layer icon (which creates a new Adjustment Layer); Photoshop will automatically mask off the selected area. **Tip:** When you want to paint a complex mask that allows shielding and show-through in different intensities, choose a soft brush, set black and white as the foreground and background colors, and use the X key to toggle between them as you paint.



A copied Adjustment Layer with a simple mask fine-tunes the effect

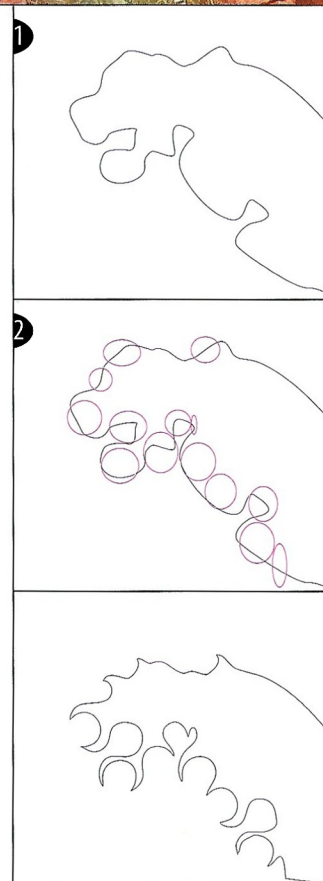
Here, for example, we used a simple gradient, a fast fade from white to black, to double the effect of the adjustment on the left edge of the photo where the shadows were particularly dense.

# Carving a wave

Bryan Leister (Alexandria, Va.) created a witty collage for a Wall Street Journal story on financial nightmares. Leister used Illustrator to generate flat-color shapes, then took them into Photoshop and used them as the basis for a collage, selecting shapes with the magic wand and using Paste Into (in the Edit menu) to add scanned textures.

**1** To create the wave, Leister first drew some "amoeba-like shapes" in Illustrator.

**2** After adding a set of ellipses (shown in red), Leister used Pathfinder, Minus Front to carve the ellipses out of the original shapes.

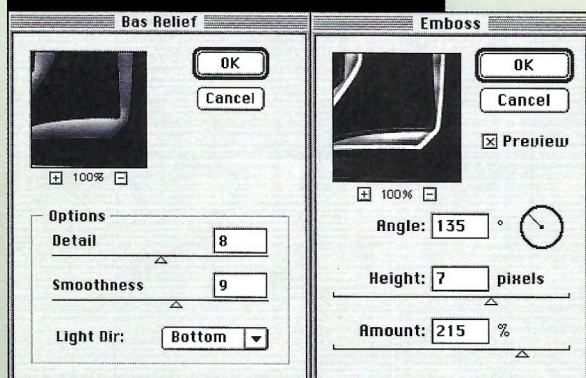






▲ Combine the Bas Relief and Emboss filters to produce a mottled glaze effect.

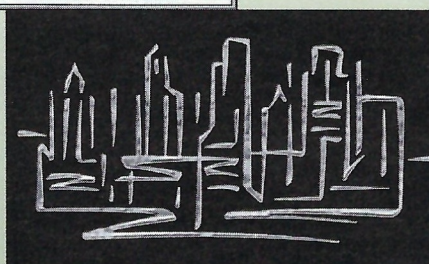
# Doodling with dimension



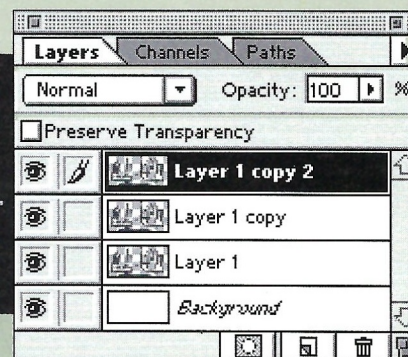
▲► First, set the art in an alpha channel and Command-click on its icon in the Channels palette to activate it as a selection. Use the **Bas Relief** filter (in the Sketch menu) to throw rounded shadows into the selection and the

▼ Once you've created the channel, Command-click on its thumbnail in the Channels palette to activate it as a selection, then move

to a new layer and Option-delete to fill it with the foreground color. If you want to intensify the color, duplicate the layer a time or two.



**Emboss** filter (under Stylize) to "crystallize" those shadow areas.



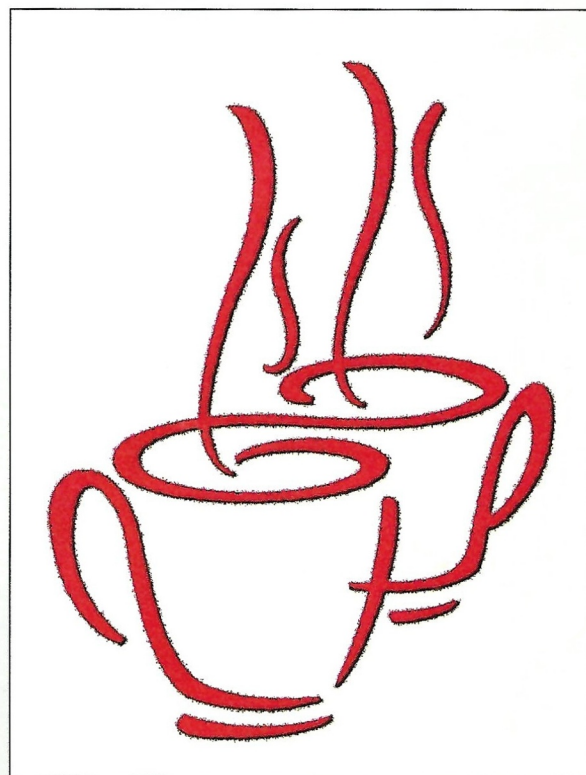
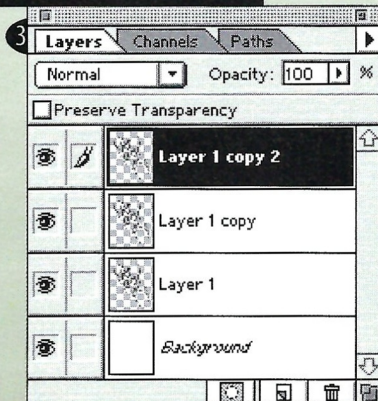
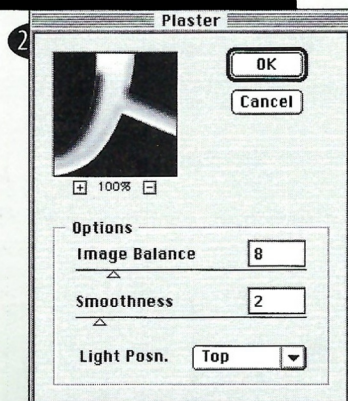


**For a** molded-plastic effect, apply Photoshop's Plaster filter to a channel selection.

**1** Set the image in a new channel and invert (Command-I) to reverse the black and white tones.

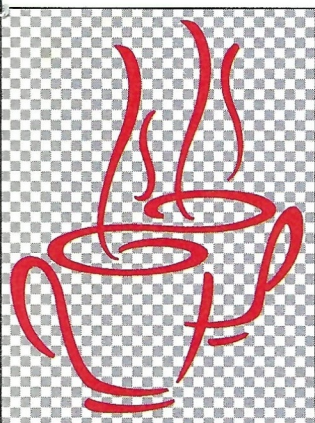
**2** Use the **Plaster** filter (in the Sketch menu) to round out the artwork in the channel. The Plaster filter is affected by the foreground and background color, and you want a lot of contrast here, so make sure black and white are active as you apply the filter.

**3** Load the channel as a selection (by Command-clicking its thumbnail in the Channels palette or choosing Load Selection from the Select menu), move to a new layer, and press Option-delete to fill the selection with the foreground color. If the color is softer than you want it to be, you can beef it up by copying the layer a time or two.

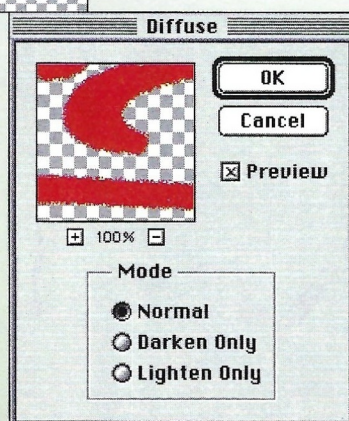




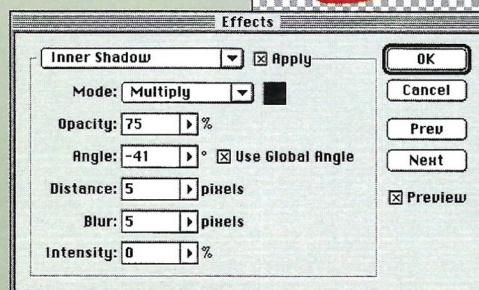
◀ When you want a torn paper look, Photoshop's Diffuse filter often delivers better results than the Torn Paper filter. (Torn Paper tends to rip thin lines to shreds.)



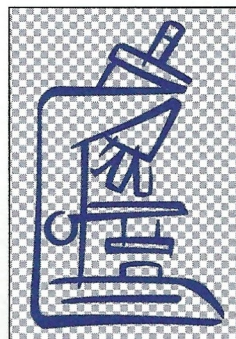
▶ Place the art on its own layer and apply the **Diffuse** filter (in the Stylize menu). If you want to make the edges even more ragged, use Command-F to re-apply the filter.



▼ Select the Inner Shadow effect (in the Layer, **Effects** menu) and specify a negative setting for the Angle to "lift" the torn paper off the canvas.



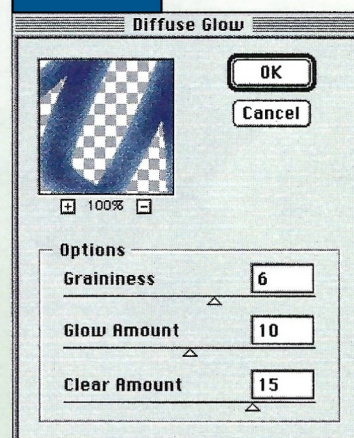
▶ This molten metal technique works best with script type and artwork with fairly thin lines and no sharp corners.



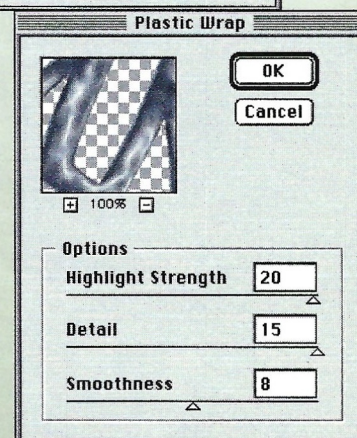
▲ ▶ The quicksilver color in the finished piece depends on the fill color you use (a deep blue). And it's important to set the art on a transparent layer.

▶ Use the **Diffuse Glow** filter (under Distort) to give the fill a mottled look.

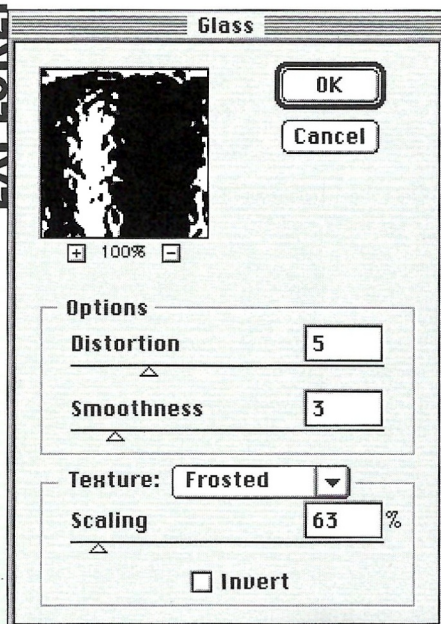
C100 M50 K30



▶ Finally, apply the **Plastic Wrap** filter (in the Artistic menu) with the Highlight Strength and Detail settings at the max.



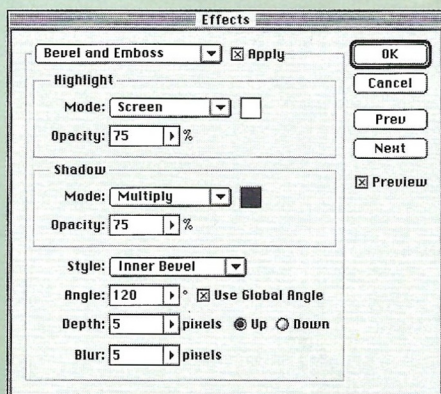




▲ ► Set the art in a new channel, invert (Command-I), and apply the **Glass** filter (from the Distort menu). To create a choppy, eroded texture, choose Frosted in the Glass filter dialog box.



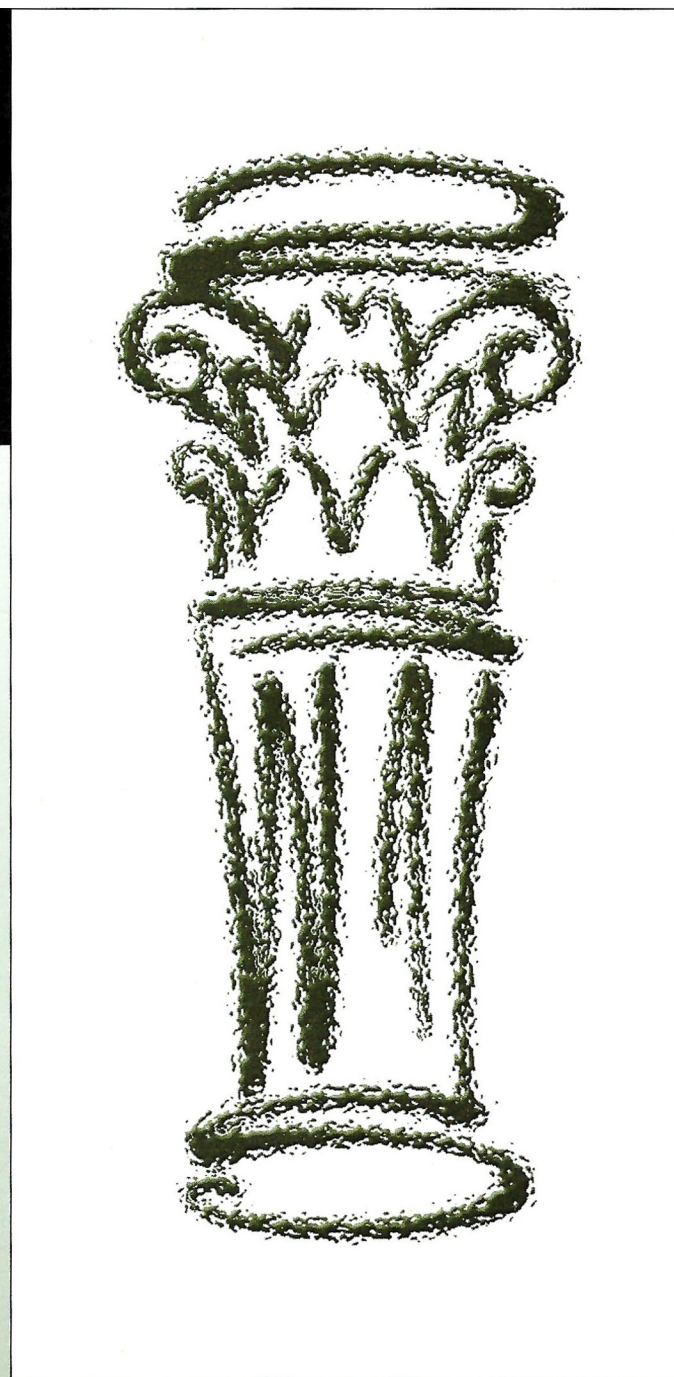
► Command-click the channel thumbnail in the Channels palette to activate it as a selection, move to a new layer, and fill the selection.



► Photoshop's Glass filter, combined with a simple Layer Effect, gives you the look of eroded plaster.



◀ Finally, use Bevel and Emboss (in the Layer, **Effects** menu) to give the chipped texture a 3D edge. We set Inner Bevel as the Style and



changed the Shadow color from the default black to a deep brown to create a softer edge.

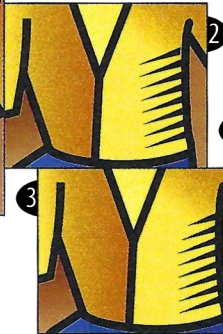


# Illustrator woodcut

In a series of icons for *Digital Television* magazine, Tim Webb (Wichita, Kan.) used simple triangles for many effects, from shading and contouring to perspective.



**1** To add shading to the shirt, Webb first drew a triangle in Illustrator.

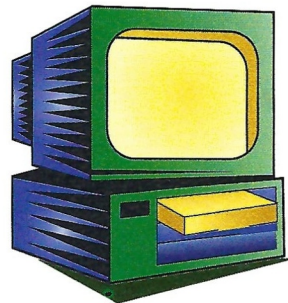


**2** He Option-dragged to copy the triangle, then pressed Command-D to build additional copies.

**3** For a more convincing woodcut look, he adjusted points to vary the lengths of the triangles.



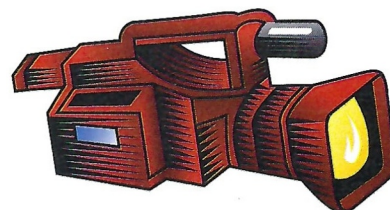
**4** By rotating the triangles, Webb could use them to define the curve in the woman's skirt. A crescent shape (shown in red) mimics a wrinkle in the fabric.



◀ Selecting the points of the black triangles and then scaling to a smaller size created the perspective effect.



▼ A camera icon is entirely shaded by triangles and curved spikes.



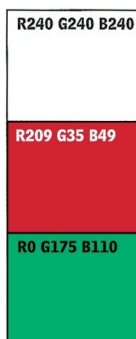


# Natural 3D forms

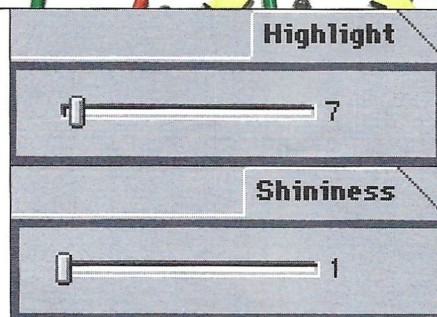
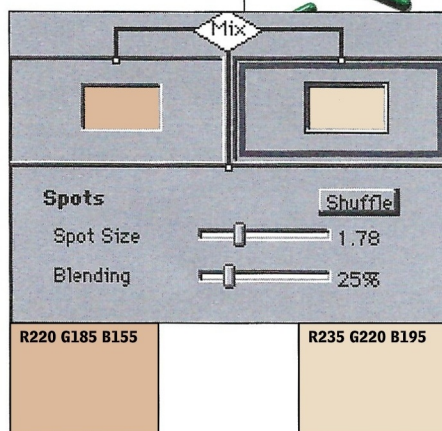
Straight out of the can, 3D images look mechanical, but with a few adjustments, you can give the art a handmade look. In this image, I used Ray Dream's Extrusion Envelope function to produce "natural" curves in the sprinkles, the stocking, and the icing stars. The squiggly forms on the "Y" cookie are a bit more complicated, so we'll cover that technique in the next issue of *Step-By-Step Electronic Design*.

by Celli Hott

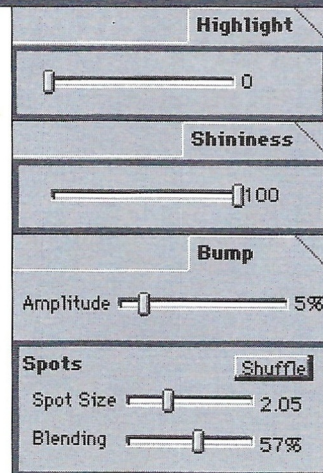
► Ray Dream is an RGB application, so one challenge was developing a set of colors that would still look edible once they were converted to CMYK for printing.



► Two shades of brown, set to mix in the Shader Editor, were used for the cookies.

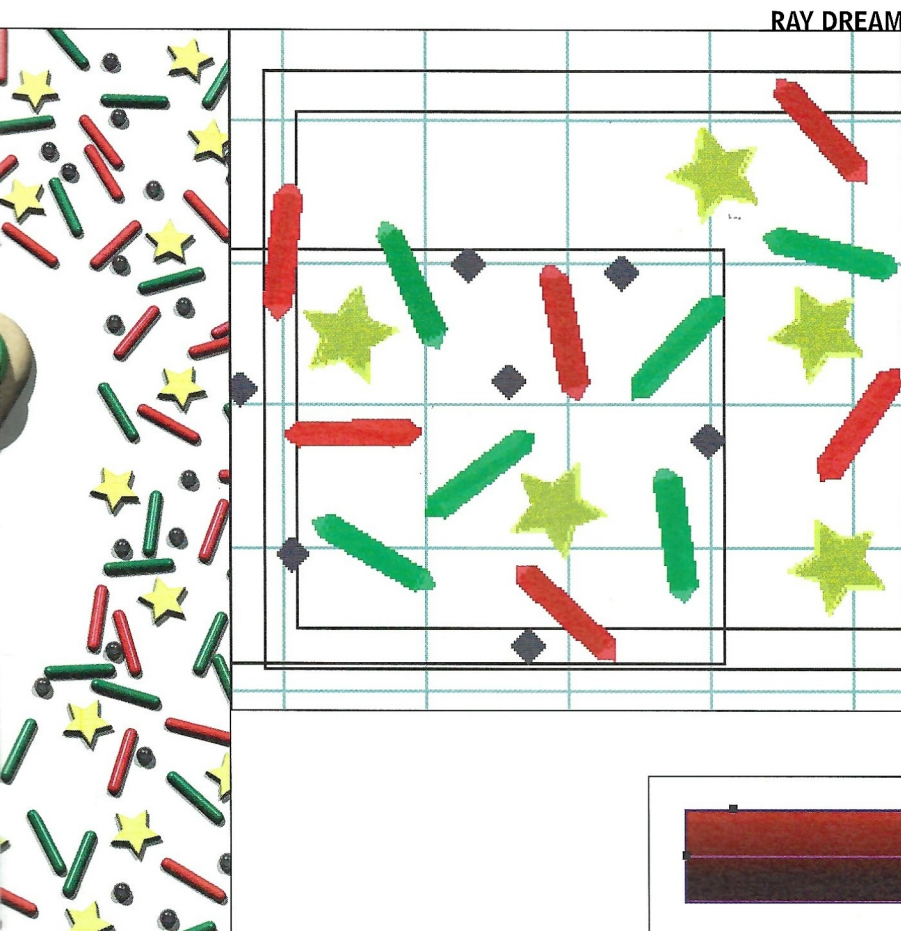


◄ To give the icing a smooth matte finish, Highlight and Shininess were set low in the Shader Editor. (Other Shader Editor settings were left at their defaults.)

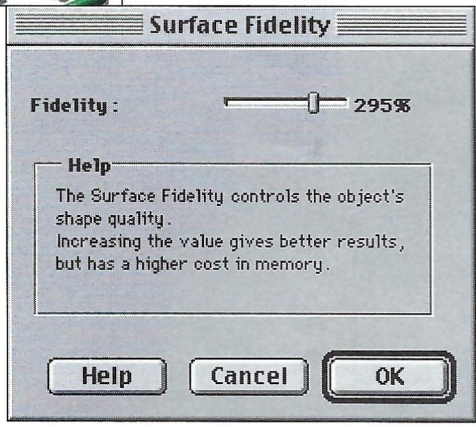


◄ A combination of low Highlight and high Shininess eked as much tonality as possible out of the two shades of brown in the cookies — without adding any gloss. The Bump settings were adjusted to create a grainy cookie-like texture.



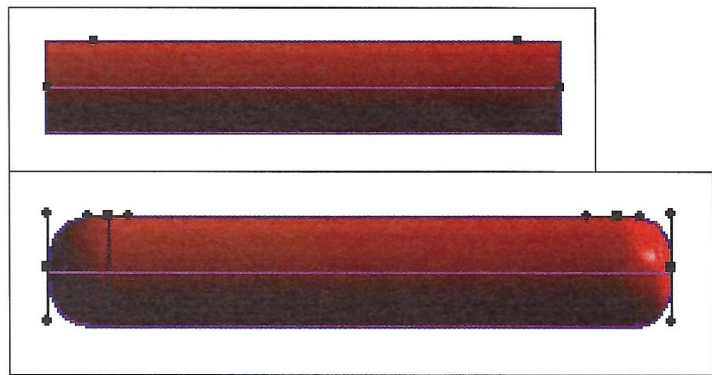


◀ I started with three sprinkles (a round-end cylinder, a sphere, and an extruded star), copied them several times, and grouped. I duplicated the group to create a frame for the cookies, rotating and flipping some of the copies to make them look different. Then I nudged individual sprinkles into new positions to make the arrangement look random.



▲ **Tip:** The Surface Fidelity (accessed through Ray Dream's Geometry menu) determines the smoothness of the rendered image. You pay for a high setting in rendering time — so I

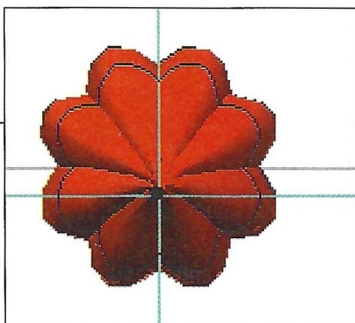
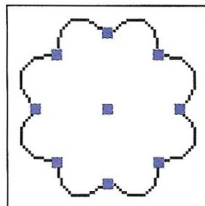
recommend keeping the value around 300 and increasing it only when necessary. If the art has a lot of curves, for example, you'll need to boost the Surface Fidelity.



▲ Ray Dream's automatic cylinders can't be altered, and I wanted to round off the ends of the red and green sprinkles. So I created my own cylinder, an extruded circle, and chose Extrusion Envelope,

Symmetrical (from the Geometry menu) to reshape it. After adding four points to the form — one at each end and two on the top edge — I converted the points to curves and repositioned the handles.

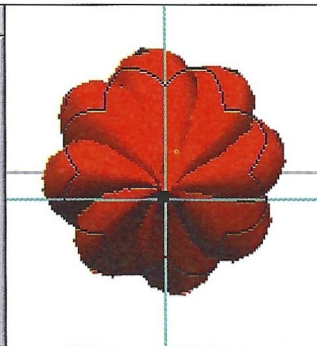
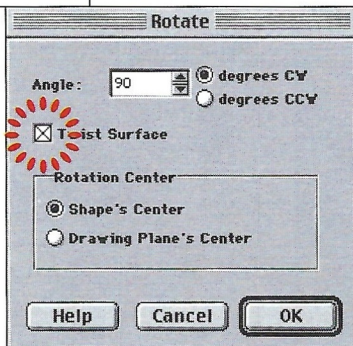




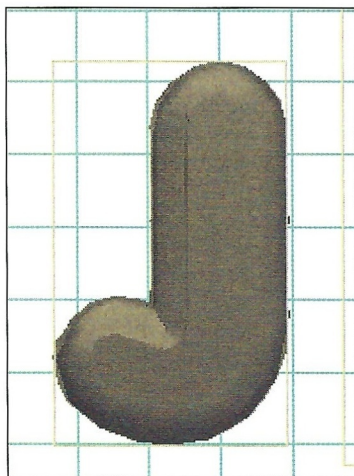
▶ After extruding the rounded star in Ray Dream, I scaled the front face to 5% (by going to the Geometry menu and choosing Extrusion Envelope, Symmetrical and then Scale).

▲ To create a star-shaped blob of icing, I drew a circle in Illustrator, applied Add Anchor Points (in the Object, Path menu), and bloated the shape with the Punk and Bloat filter (under Distort).

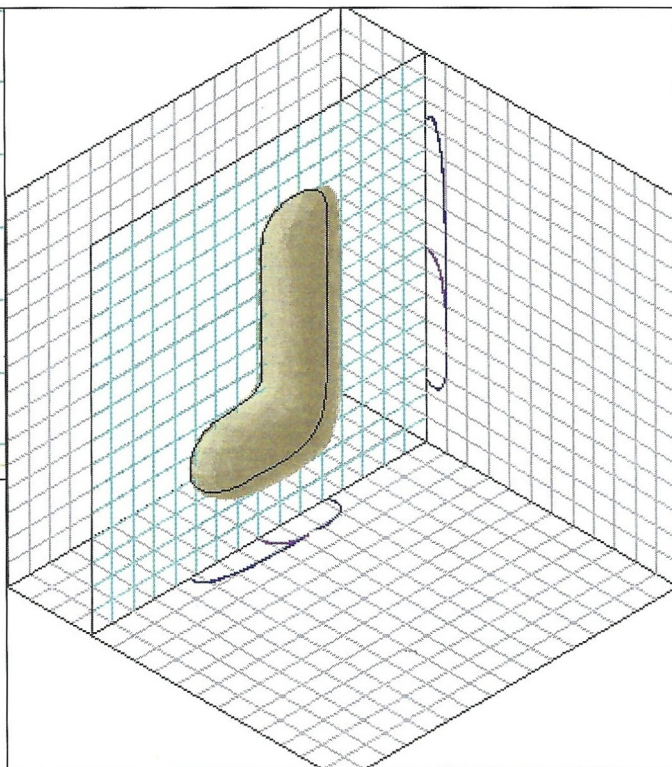
**Tip:** If you want to import an Illustrator contour into Ray Dream, be sure to save it in Illustrator 3 or 5 format. Ray Dream can't accept Illustrator files saved in a later format.



▶ To twirl the tip of the star, I checked Twist Surface in the Rotate dialog box (accessed by choosing Geometry, Rotate).

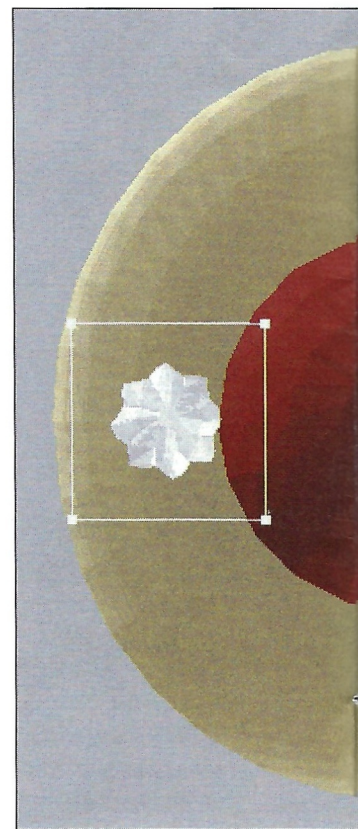


▲ At first, I thought I could simply extrude a "J" shape and give it a round bevel to create the stocking cookie. But the bevel was too sharp in the crook of the "J."



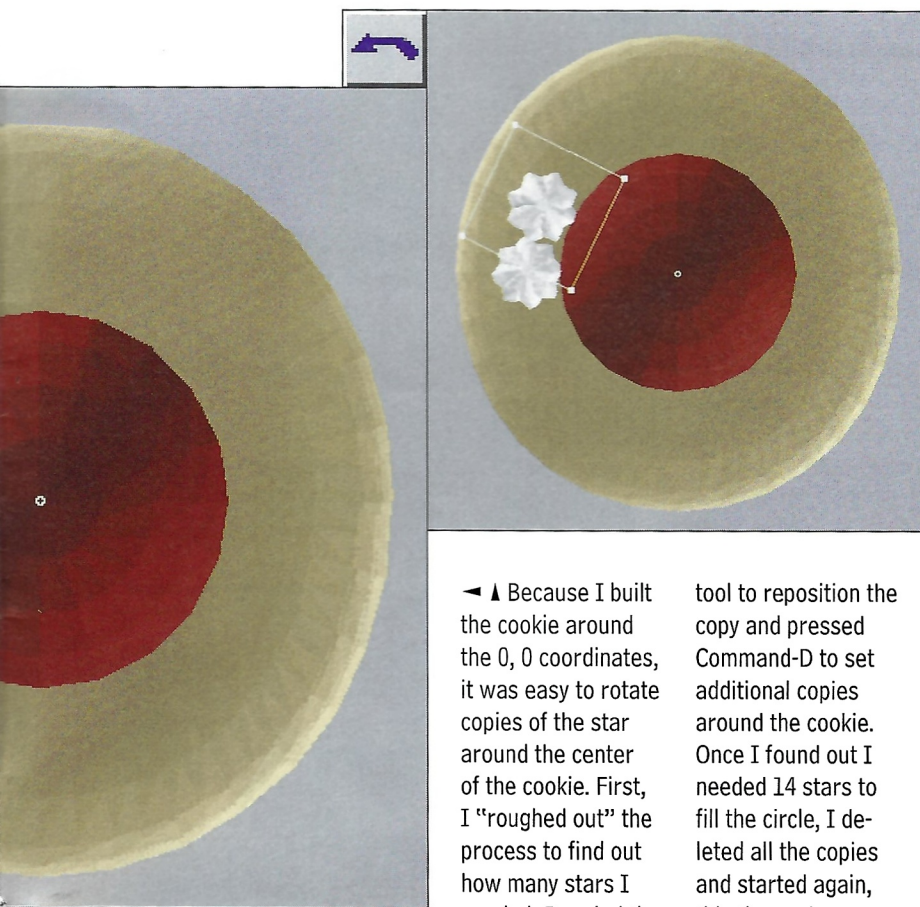
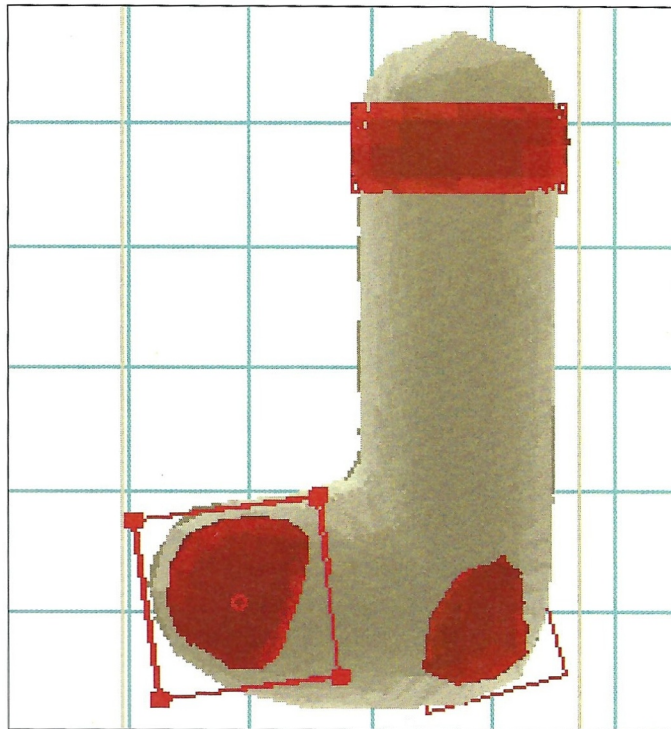
▲ To take the kink out of the bevel, I reshaped the front face of the stocking slightly by choosing Free from the Ge-

ometry, Extrusion Envelope menu, then moving the leg down a bit and shifting the foot to the right.

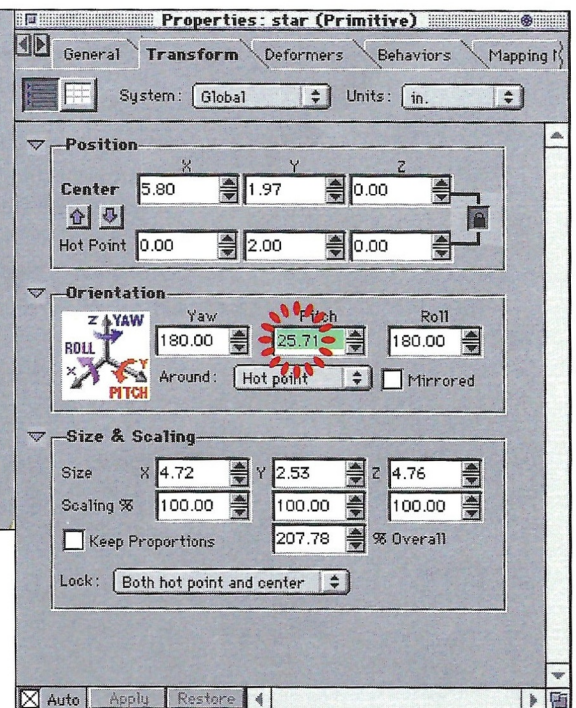




► Icing shapes at the toe and heel of the stocking were drawn with Ray Dream's pen tool, extruded slightly, and given a round bevel. A tall, thin oval was pulled along a sweep path to form the cuff of the stocking.



◀ ▲ Because I built the cookie around the 0, 0 coordinates, it was easy to rotate copies of the star around the center of the cookie. First, I "roughed out" the process to find out how many stars I needed: I copied the star and set 0, 0 as the Hot Point, then used the 2D rotate tool to reposition the copy and pressed Command-D to set additional copies around the cookie. Once I found out I needed 14 stars to fill the circle, I deleted all the copies and started again, this time using a specific rotation angle (360 divided by 14, or 25.71°).

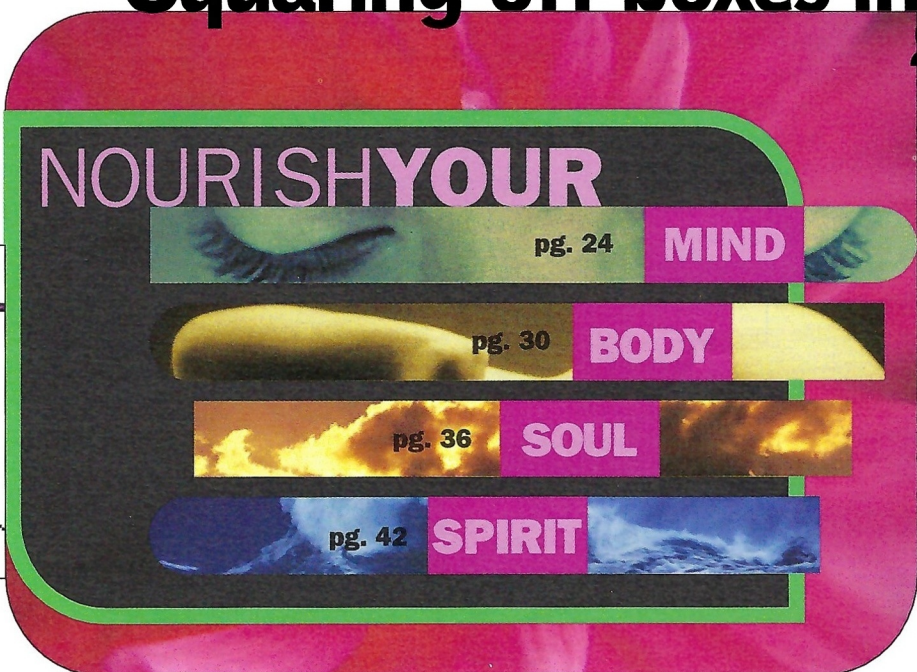
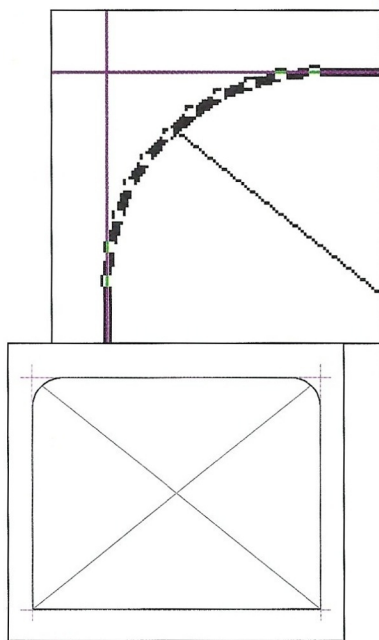


▲ As I did the rough rotation, I kept an eye on the Properties palette to see which Orientation value was affected; it was Pitch — so I knew I needed to use the Pitch setting to fine-

tune the rotation. As I set copies of the star around the Hot Point, I set the Pitch at 25.71° (the rotation angle I needed to create a circle of 14 icing stars).



# Squaring off boxes in QuarkXPress



If you need a QuarkXPress picture box with a combination of rounded and squared-off corners, here's how to create one:

Draw a round-cornered picture box and transform it into a polygon (in version 4, choose the irregular ellipse in the Item, Shape menu; in version 3, select the irregular polygon from the Item, Box menu, then choose Item, Reshape Polygon). The points defining the rounded corners will become visible (as shown at the top left).

Drag one point out to where the corner should be, then Option-click the remaining points to delete them (bottom left).

## Easy open in PageMaker

If you've recently saved a document in template format in PageMaker 6.0 or 6.5, you can open the original (rather than an untitled copy) by pressing Option as you choose the document from the File, Recent Publications menu. If the document is not saved as a template, pressing Option as you choose it from the menu will open a copy of it.

## Viewing channels

In Photoshop 5, you can toggle between an individual color channel and the composite view by Shift-Clicking the desired channel. To display the composite channel at any time, type Command-~.

## Reloading settings

In Photoshop 5, you can return to the last settings you used in the color adjustment dialog boxes (Levels, Hue/Saturation, and so on in the Image, Adjust menu) by pressing Option as you choose the dialog box from the menu or by adding Option to the dialog box's keyboard shortcut (for example, type Command-Option-L for the Levels dialog box).

## Moving layer effects

When you use Photoshop 5's layer effects to apply a drop shadow or inner shadow to an image, you can move the effect around by dragging in the image window while the Layer Effects dialog box is open.



## Blending mode shortcuts

If you like to cycle through Photoshop's blending modes until you find the effect you're looking for, you'll get a lot of use out of a new shortcut in version 5:

Pressing Shift++ (plus sign) and Shift-- (minus sign) moves up and down through the different modes. (If a tool that supports blending modes is active, these shortcuts will change the tool behavior; otherwise, they'll change the mode setting for the active layer.)

Each mode has its own keyboard shortcut as well, but many of them are all but impossible to remember. (Shift-Option-G for Lighten, anyone?) The easiest method is to remember Shift-Option-N for Normal, then use the Shift++ and Shift-- shortcuts to move through the rest of the Mode menu.

## From path to selection

When any pen tool is active in Photoshop 5, you can convert the active path to a selection by pressing Enter. (To select the pen tool, type the letter P.)

## Magnetic shortcuts

Pressing the ] or [ key increases or decreases the detection distance when Photoshop 5's magnetic lasso or magnetic pen tool is selected.

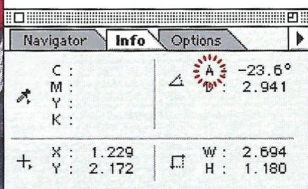
## PageMaker masking shortcut

In PageMaker 6.5, you can mask an object by placing the masking shape (drawn with the rectangle, ellipse, or polygon tool) in front of the object, then choosing Element, Mask. To mask and group the objects at the same time, press the Option key; the Mask option in the Element menu will change to Mask And Group. (To unmask and ungroup in a single step, press Option and choose Unmask And Ungroup from the Element menu.)

## ◀ Protractor in Photoshop

Photoshop 5's measure tool can be used to measure angles – for example, to help you straighten a scan or rotate type to follow an existing diagonal. Option-drag the measure tool once to measure the angle of a single line. To measure the angle between two lines, Option-drag to set the first line, then Option-drag the second line from the same starting

point (the cursor turns into a protractor). To select the measure tool from the toolbox, type the letter U.



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## Selecting a background color

In Photoshop 5, clicking with the eyedropper tool selects a new foreground color. To select a background color instead, press Option as you click with the eyedropper. (Type the letter L to access the eyedropper tool.)



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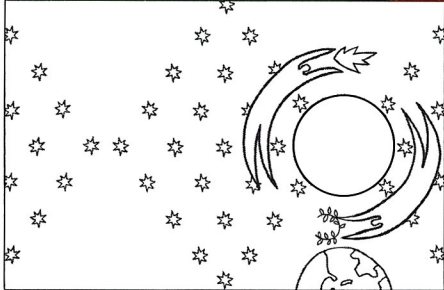
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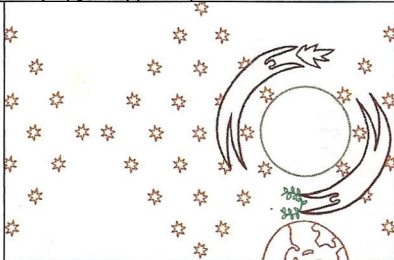


**On the cover:** When he created this image for a Stock Illustration Source catalog cover, Jose Ortega (New York) used Photoshop’s paintbucket as his primary tool, adding color to a scanned marker drawing with a single click or using the lasso first to make selections. For more of Ortega’s work, turn to page 2.



► Ortega began by scanning a marker drawing, converting it to bitmap mode in Photoshop, and then touching up flaws with the pencil tool.

► Using the paintbucket, Ortega filled the black linework with color.



► Finally, Ortega added color inside the lines with the paintbucket, trying to balance warm and cool colors and

using what was, for him, a fairly restrained palette: “Left to myself, I’ll end up using every color,” he says.

C32 M95 Y100 K35		
C23 M95 Y100 K10		
C70 M27 Y38 K25	C10 M93 Y100	
C68 M22 Y37 K15	C10 M82 Y100	
C93 M80 Y23 K50	C70 M20 Y62 K15	C38 M36 Y50 K15
C87 M45 Y20 K45	C65 M15 Y70 K7	C25 M25 Y40 K5
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